Abstract of the Invention

Method and system for lossless compression coding of a digitally represented image. The image is expressed as one or more blocks, each block having a sequence of pixels with binary pixel values. Within each block, a predictor index is chosen that predicts a pixel value as a linear combination of adjacent (actual) pixel values. The predicted and actual values are compared, and twice the predicted value is compared with the sum of the actual value and a maximum predicted value, to determine a value index, which is used to represent each pixel value in a block in compressed format. Use of the value index representation reduces the average number of bits needed to express each pixel value by an estimated 33-46 percent, reduces the time required for compression encoding by an estimated 4-6 percent, and reduces the time required for decompression by an estimated 49-61 percent. The compression ratios achieved by this coding approach compare favorably with, and sometimes improve upon, the compression achieved by several well known compression methods. Several processes in determination of the compressed values can be performed in parallel to increase throughput or to reduce processing time.